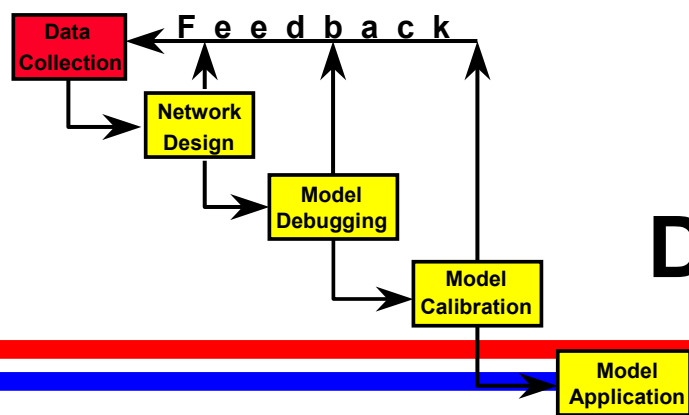


Site Mapping in the Surface-water Modeling System

Scatter Module Map Module

By
Alan K. Zundel
Brigham Young University
Provo, Ut
zundel@byu.edu

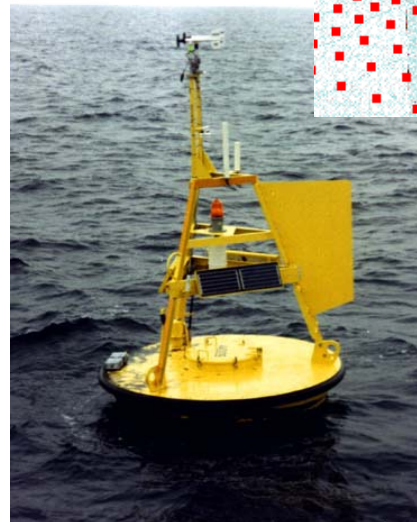
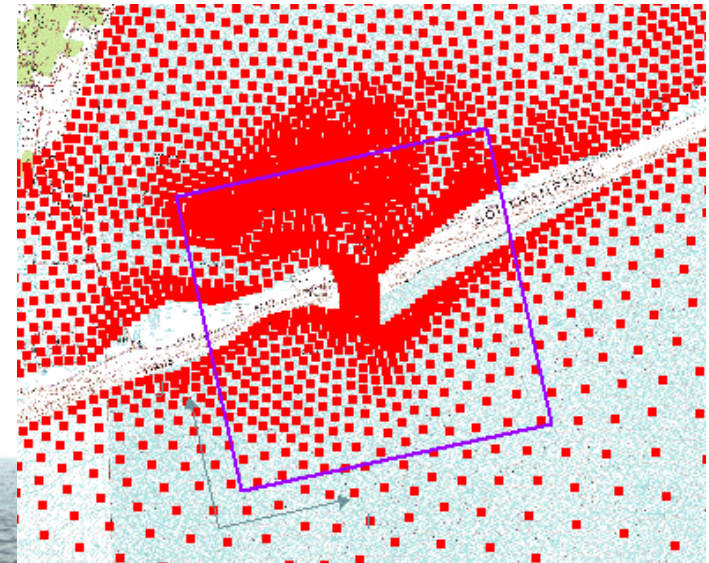


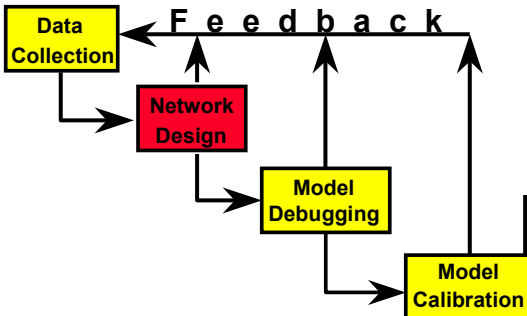


Data Collection

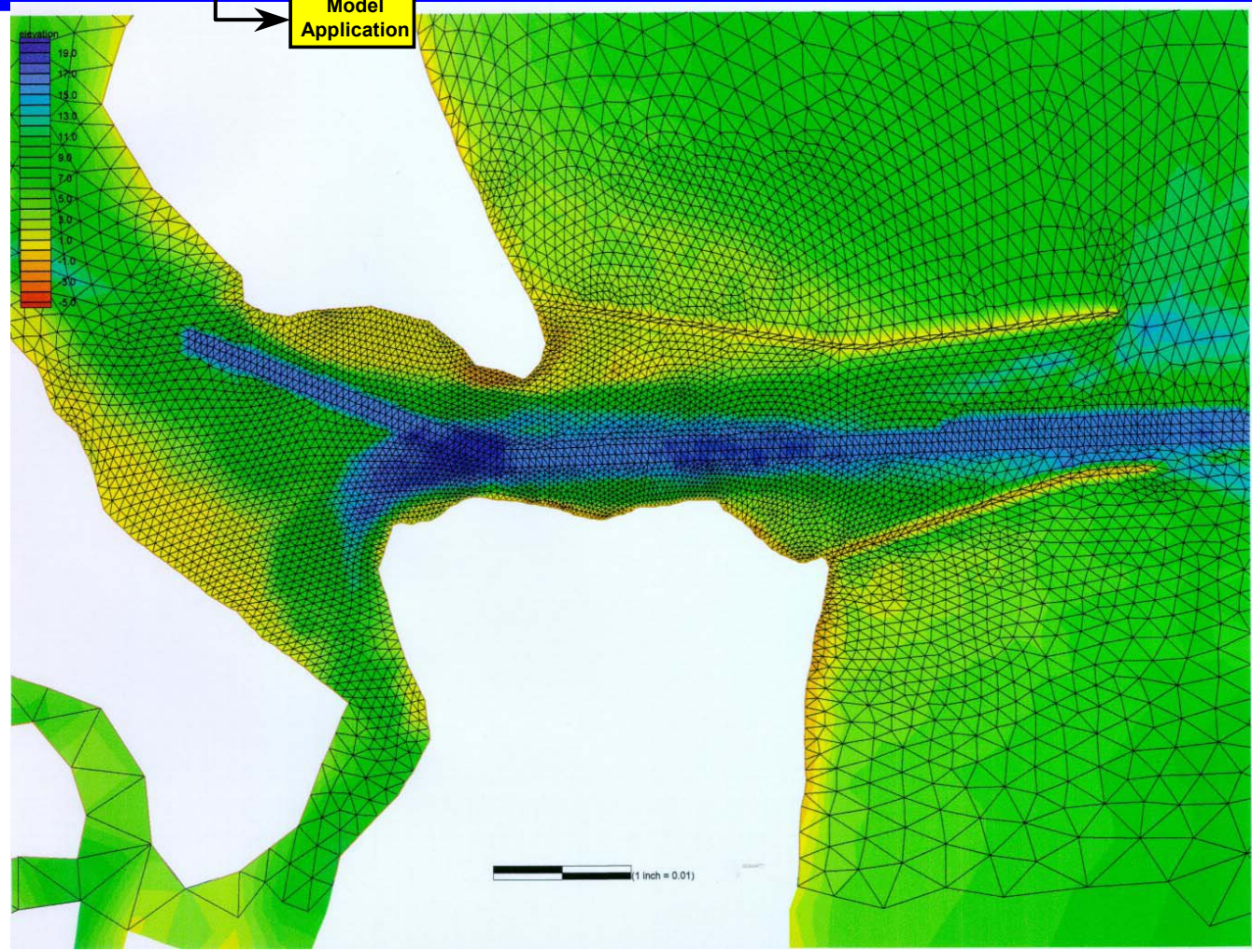


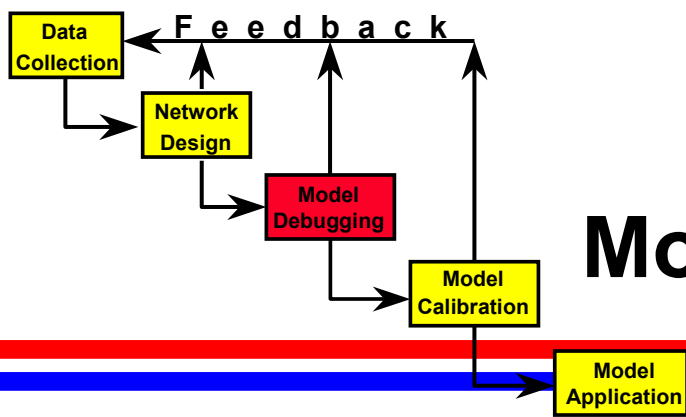
- Model Domain
- Base Mapping
- Geometry
 - Bathymetry
 - Topography
- Hydraulic/Wave/tide Data



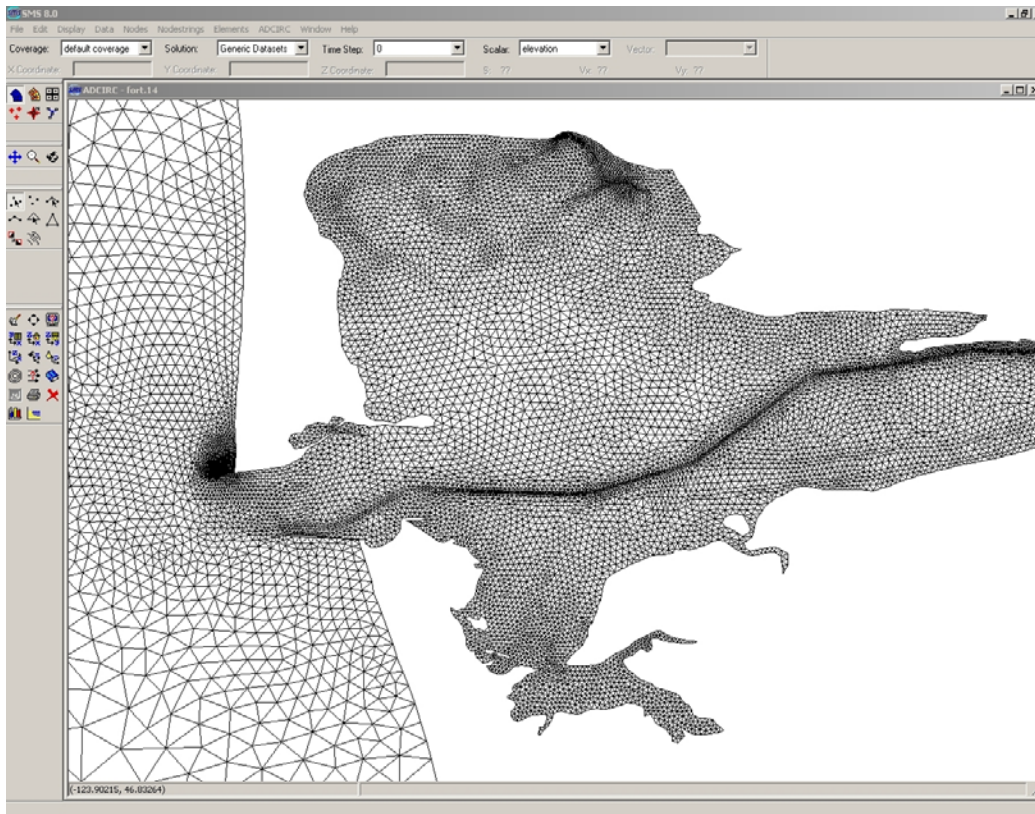


Network/Grid Design



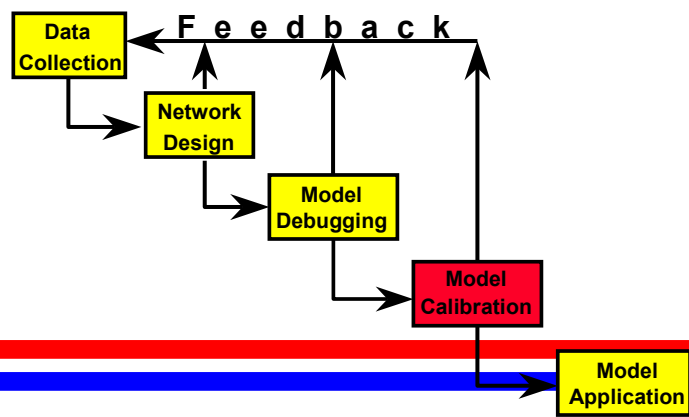


Model Debugging

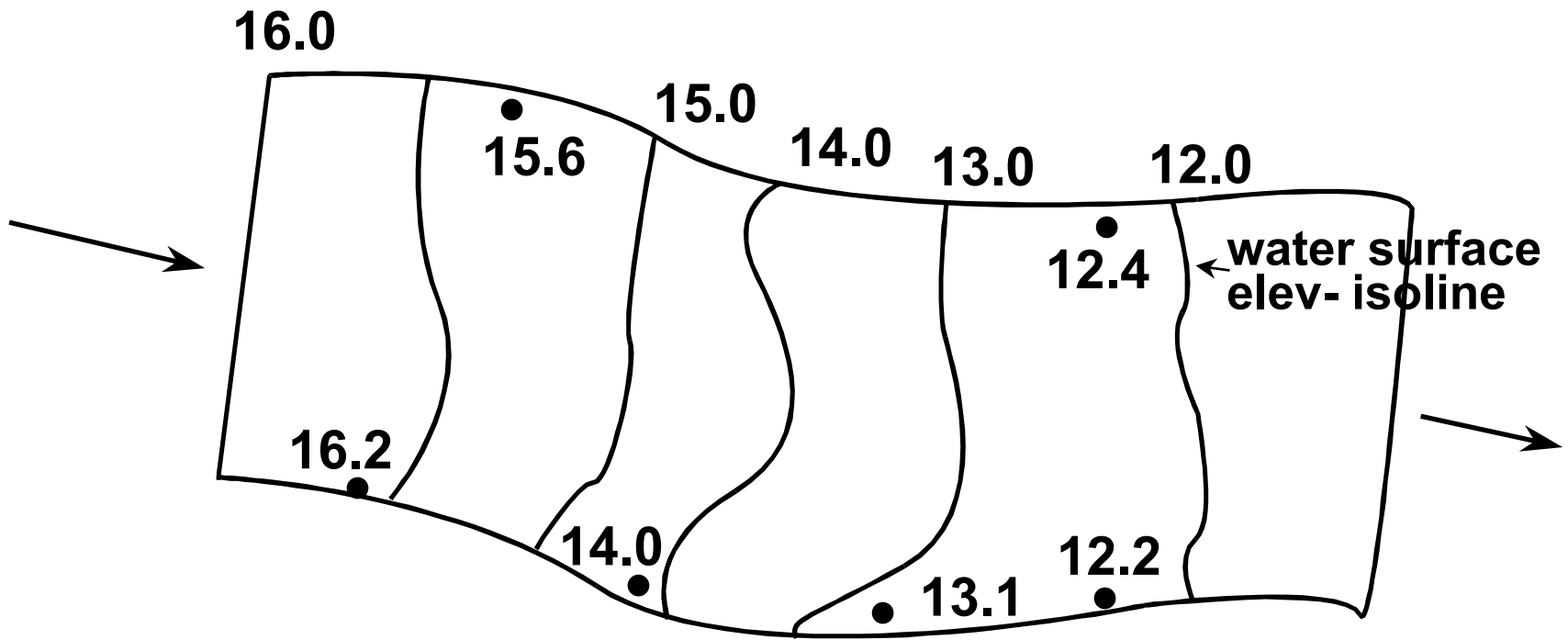


- Check Network Data
- Check Model Representation
- Edit as Needed based on model output



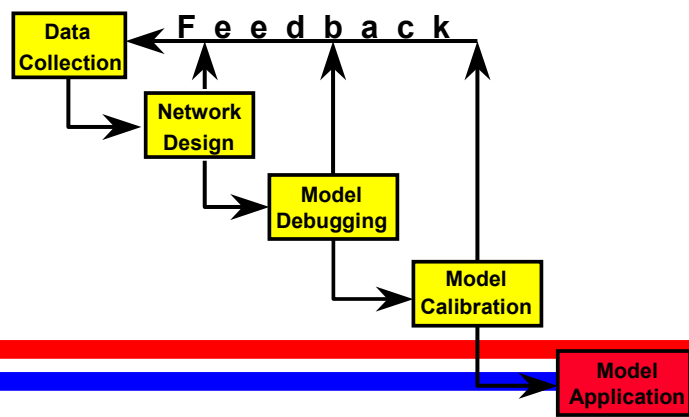


Model Calibration



Observed water elevations





Model Application

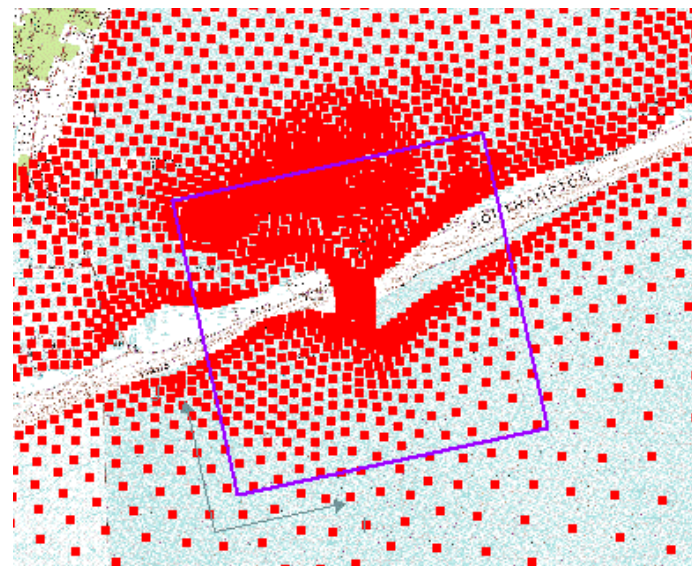
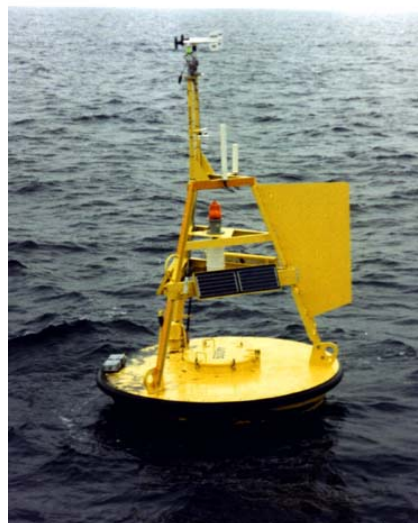


- Within Range Calibrated
- Within Range Validated
- Careful Evaluation of Results Needed Otherwise



Data In SMS

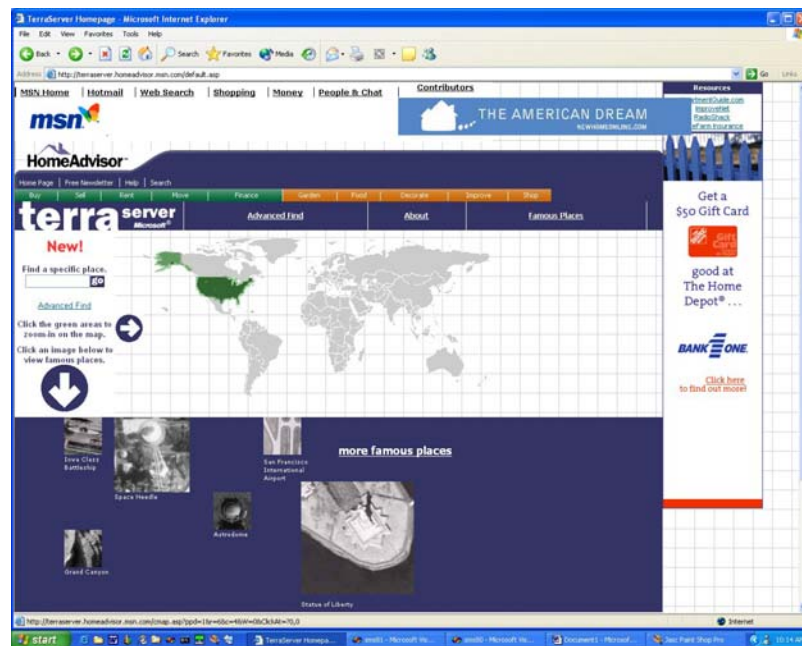
- Map Module
 - Images
- Scatter Module
 - Scattered Depth Data



Images

USGS Downloads

- <http://terraserter.homeadvisor.msn.com/default.asp>
- Quad Sheets
- Nautical Charts

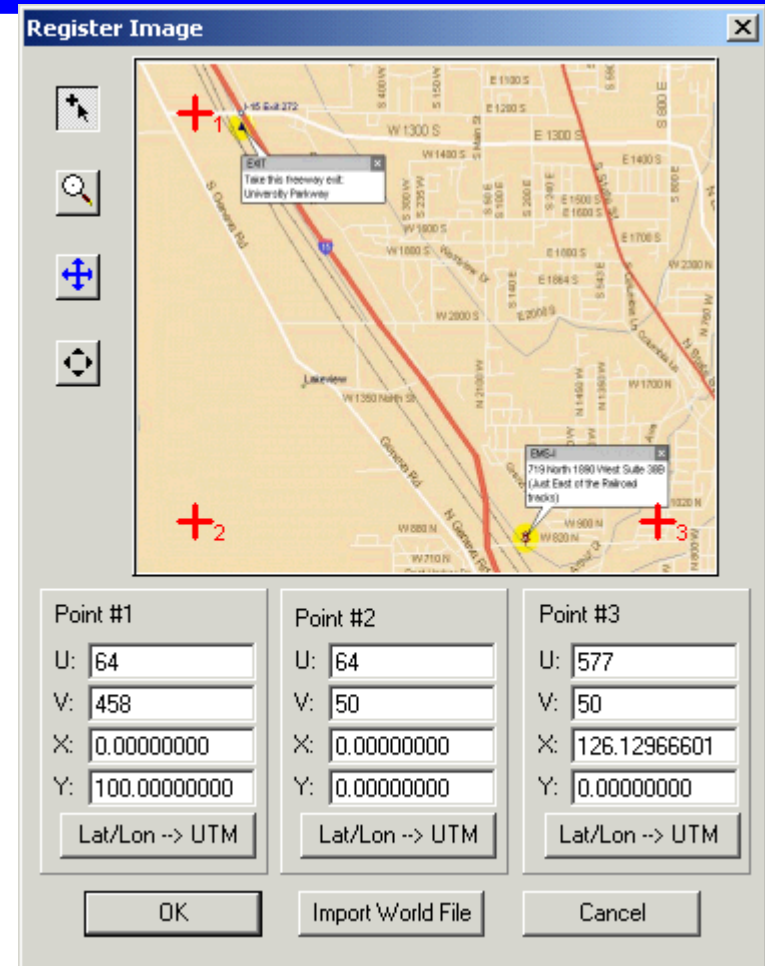


Zoom in by clicking on an desired area.

Image Registration



- Register Image Dialog Opens When an Image is Opened
- Three Points are used to Geo-Reference the Image
- Tiff World File can Store the Registration



More About Images

- Images Look Smooth Until Zoomed In
- Pixels Define Image Colors
- Image Must be Geo-Referenced

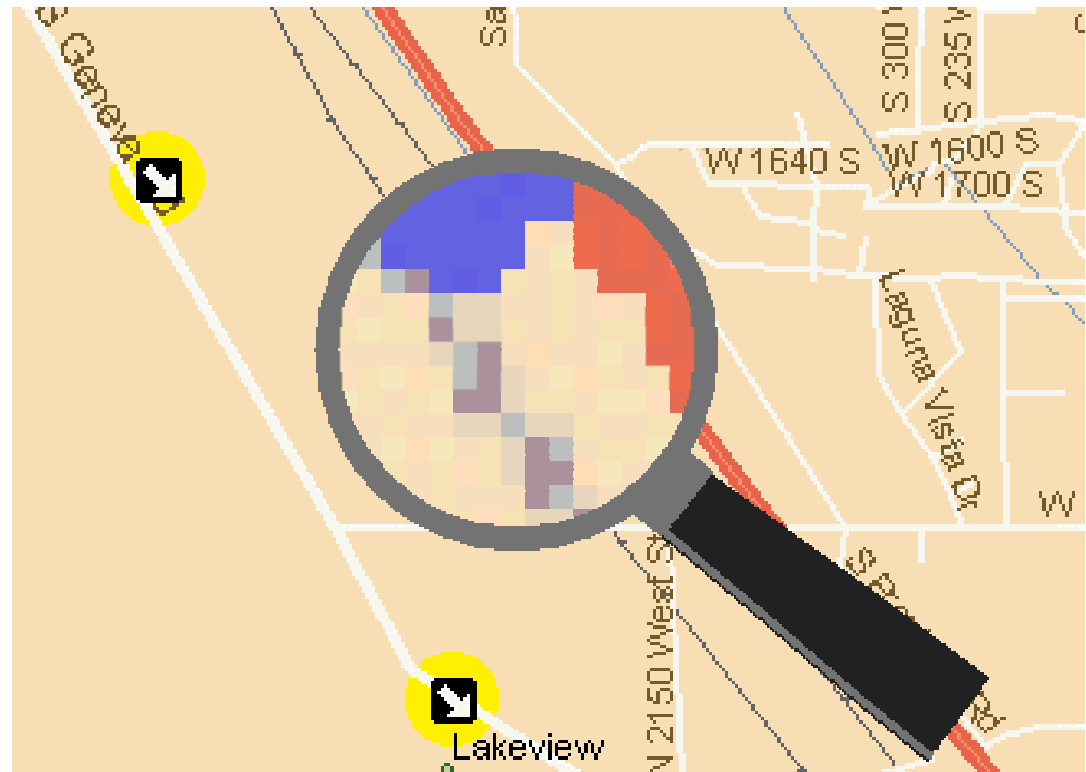
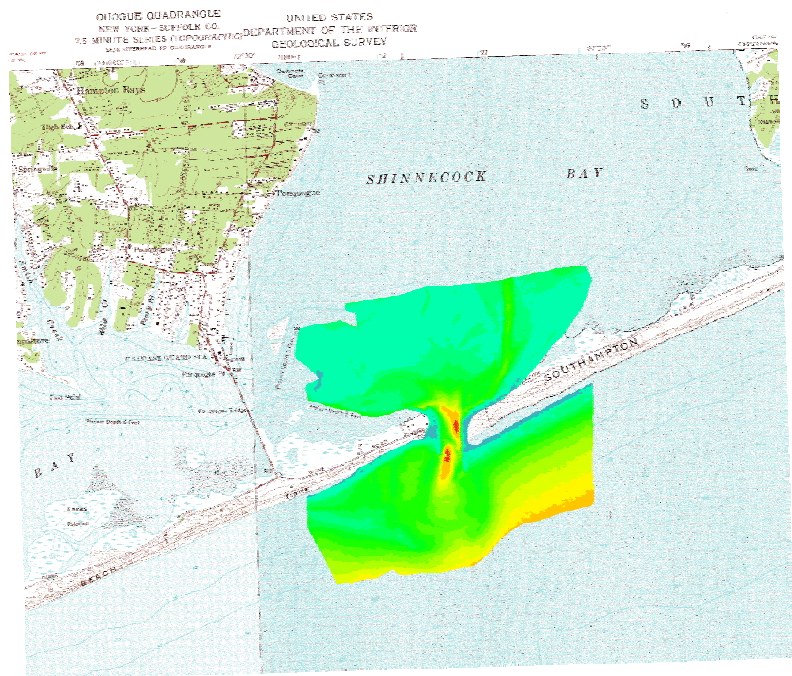
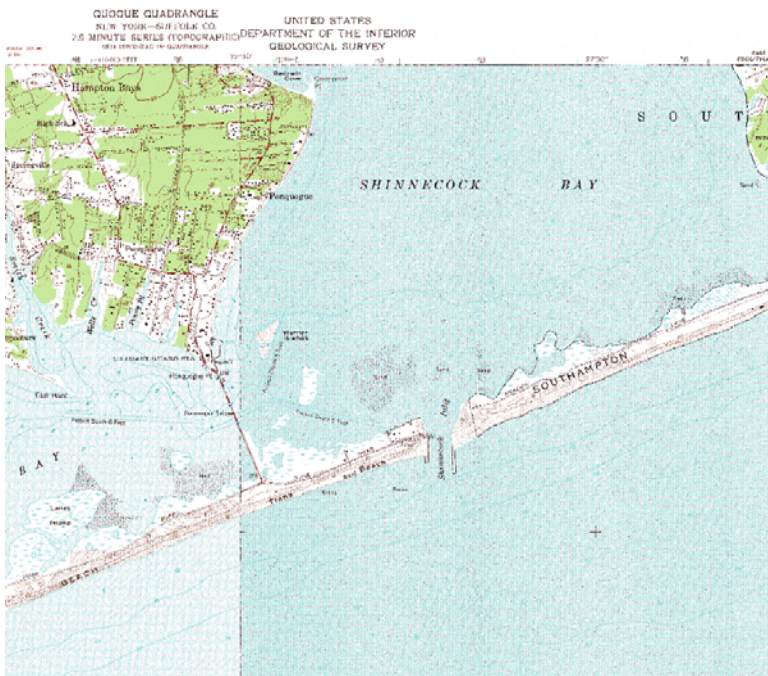


Image Data

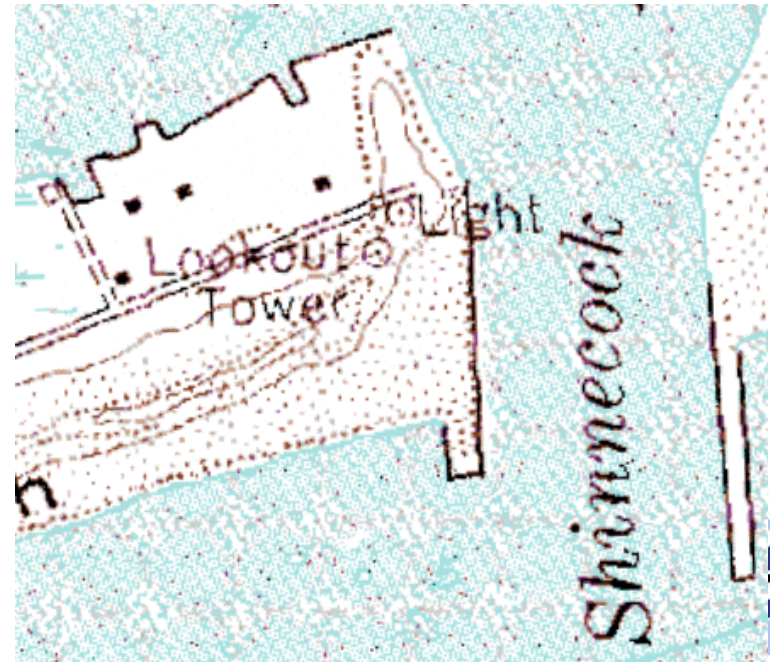


Overlay data over images



Memory Usage - Resample

- Image files may be very large
- Saved in program at screen resolution



Hydraulic Data

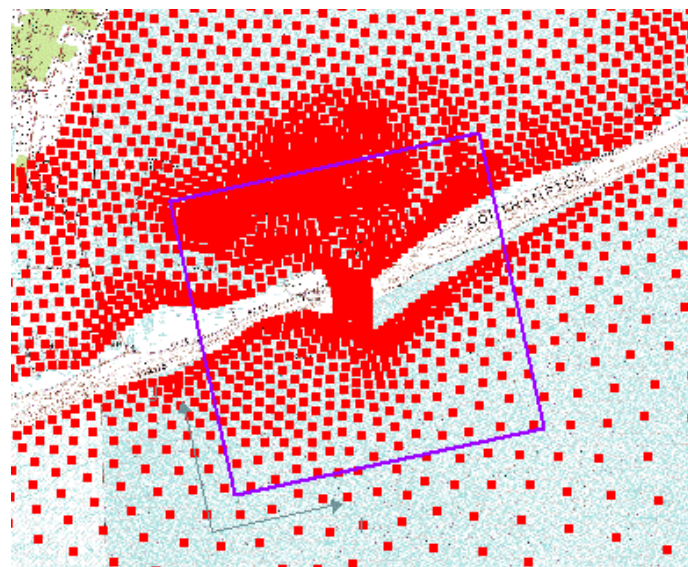


- Gaging Station Records
- FEMA, NOAA, and other previous Studies
- Field Measurements
- Historical Data



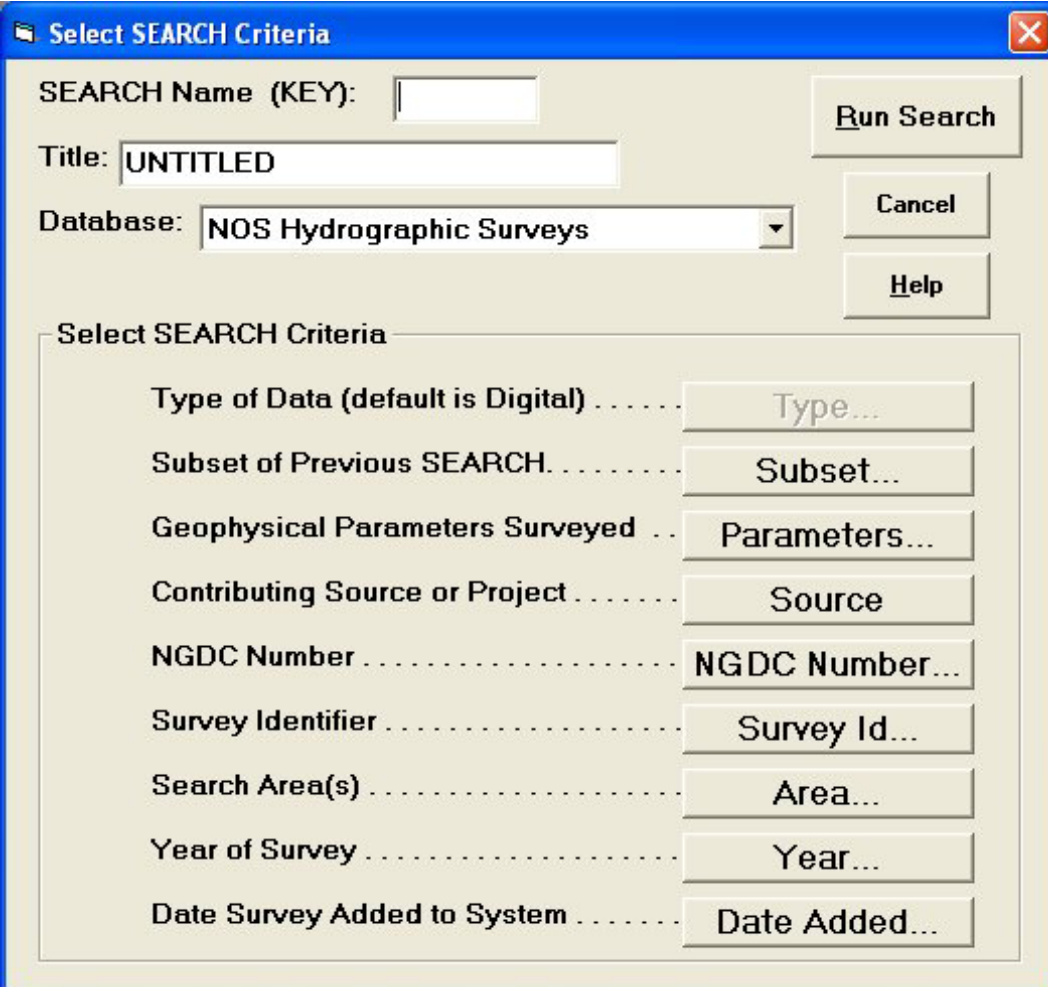
Scatter Module

- Stores spatially varied data
 - Bathymetric data most common
 - Interpolates from on grid to another
 - Allows combination of data sources
 - Data thinning or filtering



Scatter Data Sources

- Previous Studies
- Local Surveys
- Databases
 - ADCIRC East Coast Database
 - GEO-DAS



Select SEARCH Criteria

SEARCH Name (KEY):

Title:

Database:

Run Search **Cancel** **Help**

Select SEARCH Criteria

Type of Data (default is Digital)	Type...
Subset of Previous SEARCH.	Subset...
Geophysical Parameters Surveyed ..	Parameters...
Contributing Source or Project	Source
NGDC Number	NGDC Number...
Survey Identifier	Survey Id...
Search Area(s)	Area...
Year of Survey	Year...
Date Survey Added to System	Date Added...

Starting a GEO-DAS Search



Select SEARCH Criteria

SEARCH Name (KEY):

Title:

Database:

Select SEARCH Criteria

Type of Data (default is Digital)	<input data-bbox="700 778 967 825" type="button" value="Type..."/>
Subset of Previous SEARCH	<input data-bbox="700 839 967 886" type="button" value="Subset..."/>
Geophysical Parameters Surveyed ..	<input data-bbox="700 901 967 948" type="button" value="Parameters..."/>
Contributing Source or Project	<input data-bbox="700 962 967 1009" type="button" value="Source"/>
NGDC Number	<input data-bbox="700 1023 967 1071" type="button" value="NGDC Number..."/>
Survey Identifier	<input data-bbox="700 1085 967 1132" type="button" value="Survey Id..."/>
Search Area(s)	<input data-bbox="700 1146 967 1193" type="button" value="Area..."/>
Year of Survey	<input data-bbox="700 1208 967 1255" type="button" value="Year..."/>
Date Survey Added to System	<input data-bbox="700 1269 967 1316" type="button" value="Date Added..."/>

Select *File* | *New Search* to bring up the *Select Search Criteria* dialog.

Enter any *SEARCH Name* and *Title*.

Set the *Parameters...*, *Source*, *Area*, and *Year....*

Click the *Run Search* button to run the search.



Reviewing a GEO-DAS Search



After the search has been run:

Select *Program | Retrieve Headers* to find out specific information about each of the surveys found.

GEODAS

File Program Summary Window Help

Summary Listing

03001018 H08615 HYD93 Header (page 2 of 2)

03001018 H08615 HYD93 Header (page 1 of 2)

survey	NGDC Num	SF	date	source institution
H08615	HYD9303001018	SF	19791231	National Ocean Survey, N.O.A.A.
country	platform name	type	chief hydrographer	
U.S.A.	(MULTI-SHIP)	SHIP	D.G. RUSHFORD	
project	type of survey	sur	eyr	scale
			1961	196110,000
area - general	area - specific			
BLOCK ISLAND SOUND	NEBRASKA SHOAL			
quality of survey description	processing status description			
position determination				
hd-r horizontal datum in records	hd-o horizontal datum (original)			
NOS00North American Datum 1927 (see 1.)	NOS00North American Datum 1927 (see 1.)			
vd vertical datum	tide orig.sounding units			
02Mean Low Water	Feet			

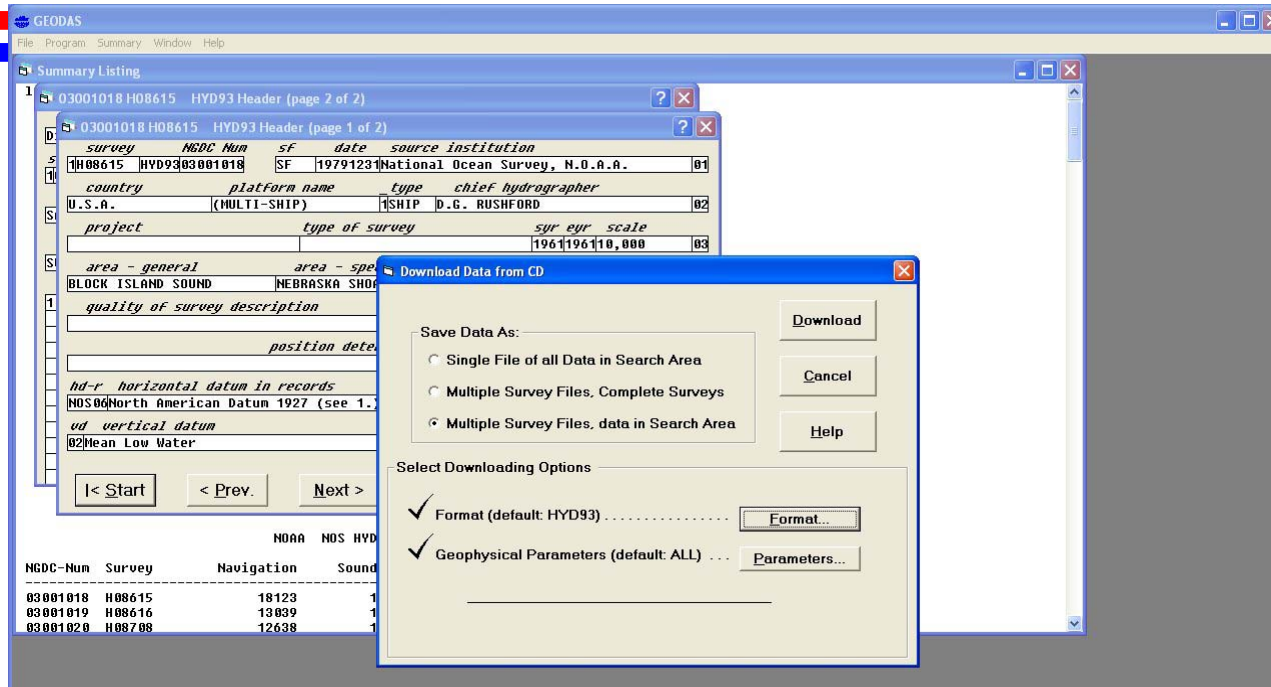
< Start < Prev. Next > Exit Help

NGDC-Num	Survey	Navigation	Soundings	Features
03001018	H08615	18123	18025	98
03001019	H08616	13039	13039	0
03001020	H08708	12638	12461	177

07110201 Use Program Menu to choose next Operation



Saving Data from GEO-DAS



- Select:
 - Program Download Data...*
- Choose:
 - Multiple Survey Files, data in Search Area.”
 - Set format as “Space Delimited XYZ ASCII Format.”
- Click *Download*.



Geo-Referencing



- Data is Useful Only When Geo-Referenced
- Data in the Same Coordinate System can be Merged Together
- TIFF/JPEG Images Can Also Be Geo-Referenced



Coordinate Conversion



- Coordinate System is Specified in SMS
- Coordinate Conversion is Supported inside SMS

Coordinate Conversion

Current Horizontal System: UTM Coordinates (Zone 11 120W to 114W), North, Meters
Current Vertical System: Meters
Current Data Information:

Current Options...

Convert to:

Horizontal System: State Plane NAD 27 (US) St. Plane Zone: California 6 - 0406
Ellipsoid: Clarke 1866
Units: U.S. Survey Feet

Vertical System: Local
Units: U.S. Survey Feet

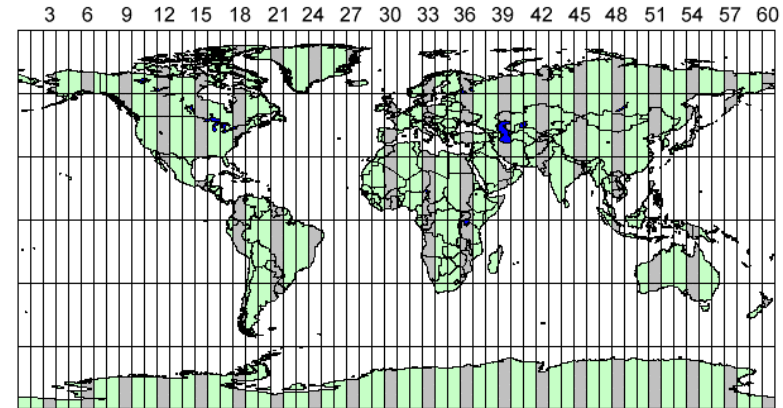
Convert Cancel



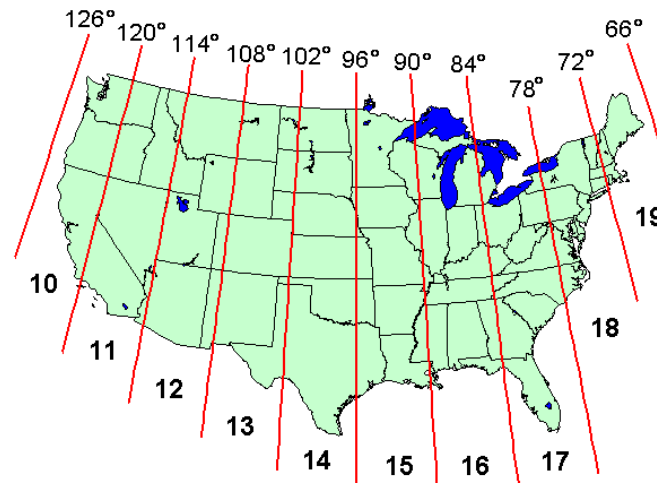
Horizontal Coordinate Systems

- Geographic
- State Plane
- UTM
- NAD 27/83/HPGN
- Units
 - Meters
 - US Survey Feet
 - International Feet

World UTM Zones



U.S. UTM Zones



Vertical Coordinate Systems



- NGVD 29
- NAVD 88
- Units
 - Meters
 - US Survey Feet
 - International Feet

